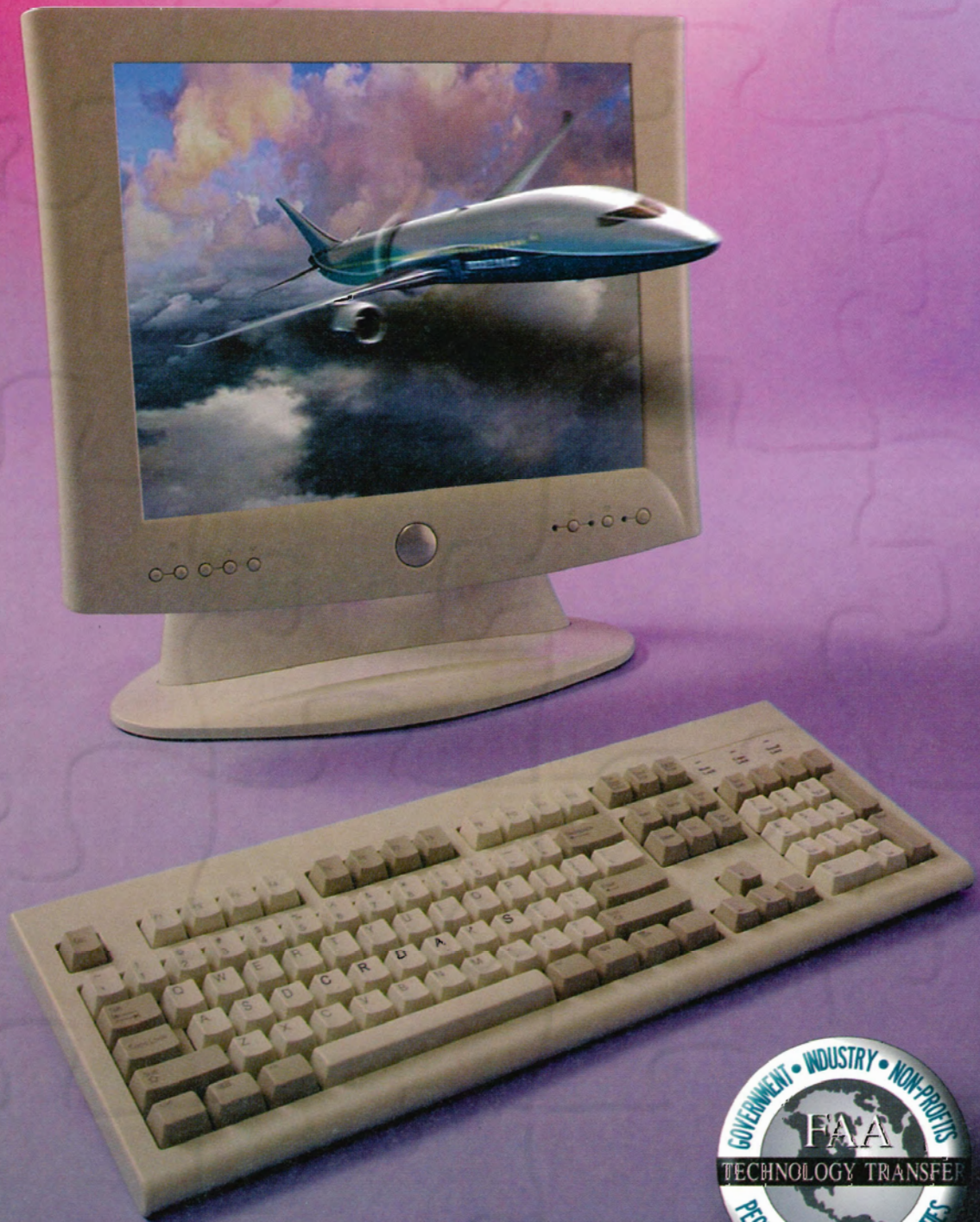


Technology Transfer

in the
Federal Aviation Administration





Technology Transfer

The Key to Economic Success

The Government invests billions of dollars annually in its laboratories for research and development (R&D). This investment created Federal laboratories that produce advanced technologies that can serve not only Government interests, but also the interests of the business and academic communities.

Technology transfer is the process by which existing knowledge, facilities, or capabilities developed with Federal funding are transferred and utilized to fulfill public and private needs.

Fostering cooperation among Government, academia, and industry is an urgent requirement if the United States is to remain a world leader in developing innovative and leading-edge technologies. Technology transfer addresses this need for Government and private sector cooperation by enabling companies, academic institutions, State and Local Governments, and Federal laboratories to work together to develop innovative technologies and marketable products. As a major participant in Federal R&D, the FAA is especially active in promoting technology transfer.

You and the FAA as Partners

The FAA Technology Transfer Program provides an opportunity for your organization to tap into the endless resources that our laboratories have to offer. As a technology transfer partner with the FAA, you have access to our advanced technologies, state-of-the-art facilities, and the expertise of our highly skilled scientists and engineers. This access can help you leverage resources and develop products and technologies that will be commercially successful and help ensure long-term success for you.

How You Can Benefit From Technology Transfer

- ➔ **Access to facilities and equipment.** Technology transfer gives you access to some of the most scientifically and technically advanced laboratories and test facilities in the world.
- ➔ **Expertise.** Our scientists, engineers, and other highly skilled personnel are considered to be at the top of their fields and are committed to working with you to develop innovative technologies that will bring you prestige among your peers.
- ➔ **Technologies that are advanced, yet cost-effective.** You can use our advanced technologies and high-level expertise to leverage your resources and reduce your start-up costs for product development.
- ➔ **Intellectual property.** Technology transfer provides legal protection for marketing intellectual property developed from technology transfer related efforts and for the sharing of licenses, royalties, fees, and other income.
- ➔ **Profitability.** Licenses issued by the FAA may result in significant income for you, and the results of your technology transfer effort will be used to its fullest commercial potential.

Regardless of the type of industry you're in, working together with the FAA may help you find the competitive edge you need in today's marketplace. Through your technology transfer partnership with the FAA, you will take an active role in maintaining our world leadership in aviation. Together, through the innovative technologies that we develop and bring to the marketplace, we will be helping our nation meet the goal of a strong and healthy economy for the well-being of all United States citizens.

Partnership



Government Agencies

Academia

Non-Profits

Laboratories

Industry

Laboratories

The image shows a vast industrial interior, likely a laboratory or testing facility. A prominent feature is a long, narrow testing track or conveyor system that runs from the foreground into the distance. To the right of this track is a large, multi-level steel structure with a complex framework of beams and supports. The ceiling is high and features a series of parallel steel beams. The floor is a smooth, dark surface. The overall atmosphere is industrial and technical.

Pavement Test Facility

FAA Laboratories and Test Facilities

The FAA's Federal laboratory is the William J. Hughes Technical Center located at the Atlantic City International Airport, New Jersey. The Technical Center is one of world's leading engineering, research, development and testing facilities that serves as the national scientific testbed for the FAA. Much of the FAA's high-priority research is conducted in its unique, world-class laboratories.

The FAA's researchers and scientists continue to support the FAA's strategic goals and mission by developing the technologies, tools, and procedures to ensure that the FAA accomplishes critical aviation safety and efficiency goals. Programs include testing and evaluation in air traffic control, communications, navigation, airports, aircraft safety, and security.

The FAA's R&D facilities are considered to be some of the most scientifically advanced in the world, with innovative technologies and instrumentation, as well as laboratories that can be reconfigured to meet the wide range of aviation-related issues.

Some of the laboratories based at the Technical Center include:

The National Airspace Systems Laboratories

These laboratories are the cornerstone of the Center's air traffic laboratory complex. The laboratories support all stages of research and acquisition from concept exploration and system development to field implementation. These cutting-edge laboratories provide seamless integration for thorough and advanced research development, support and testing of operational air traffic control systems and subsystems.

Aviation Safety Laboratories

The continued safety of this country's air carriers is an important element in maintaining the public's confidence in America's airways. The Technical Center has the largest full-scale aviation fire test facility as well as an aircraft components fire test facility, wind tunnels, impact test facility and fuel safety laboratory. Researchers at the FAA's aviation safety laboratories are able to introduce new technologies, procedures, and training methods developed by agency scientists and engineers in conjunction with industry research partners to ensure that the FAA accomplishes critical aviation safety and efficiency goals.

Human Factors Laboratory

This state-of-the-art facility is designed for the development of aviation-related human factors issues that can be studied in a controlled scientific environment. The laboratory provides computer-human interface

rapid prototyping, real-time air traffic control simulations, and human performance data collection and analysis for future air traffic control concepts and current technology.

Other Facilities

The research and laboratory facility at the Civil Aerospace Medical Institute (CAMI) is located adjacent to the Will Rogers World Airport in Oklahoma City. It is considered to be the world's premier aerospace medical research facility that supports government and industry researchers from the United States and abroad. CAMI is significantly enhancing aviation safety through the application of medical and human factors knowledge in highly complex technological environments.

Accessible Facilities

Joining the FAA in its technology transfer efforts enables organizations to utilize all of these state-of-the-art facilities to meet their research and development needs. Even though the FAA laboratories and test facilities were built primarily to address aviation related issues, organizations with specialties as diverse as communications, electronics, and health-care have used the laboratories' resources to successfully develop new technology and products to give them an edge in today's marketplace. This is an important element in a working relationship and has led to the FAA working side-by-side with its partners in becoming a leading participant in technology transfer.



Creativity



How Technology Transfer Works

Congress has found that technology and industrial innovation are central to the economic, environmental, and social well-being of citizens of the United States.

Competition in the global marketplace has intensified as many nations are striving to develop advanced technologies and products. American industry is taking note of this trend and is looking for ways to gain a significant edge over other nations.

One option that is growing in importance is for industry to become research and development partners with Federal laboratories through collaborative arrangements.

Mechanisms

The FAA has taken an active role in fostering partnerships with other Government agencies, academic institutions, and industry. By entering into this kind of

partnership with the FAA, organizations have access to technical expertise, state-of-the-art facilities and equipment, and know-how that can lead to the development of commercial products and applications. The result is an increase in the competitiveness of the American economy in the global market.

The FAA uses several approaches to establish and maintain technology transfer partnerships. Some of these include:

Cooperative Research and Development Agreements (CRDAs)

A CRDA is a collaborative research agreement to develop an idea, prototype, process, or product for direct application to the civil aviation community for commercial exploitation. A CRDA enables the FAA and its partnering organization to share personnel, resources, services, facilities, intellectual property, and equipment for specific R&D projects. A CRDA



Infrared Deicing System

can also result in the development of intellectual property that is protected according to the terms and conditions of the agreement.

Personnel Exchanges

Technology transfer facilitates the personnel exchange of scientific and technical personnel among academia, industry, and Federal laboratories as well as assignments in embassies of the United States.

Patents and Licensing

In return for participating in FAA technology transfer efforts, we can grant a patent license or assign future ownership rights to you. In addition, if you have an interest in an invention that the FAA is developing, you can enter into a cooperative arrangement with us to further the development of the invention.

Loan, Lease, or Donate Excess Research Equipment

Under technology transfer, the Government can loan, lease, or give research equipment to an educational institution or non-profit organization for the conduct of technical and scientific education and research activities.

Networking

The FAA has been successful in gathering together representatives from Government, academia, and industry to exchange ideas and information through a series of advanced technology seminars, international symposiums, and open houses.

Cooperative Research Programs

The FAA participates in the Small Business Innovation Research Program using high-level expertise in the small business community throughout the United States.



Innovation



High Performance Research Vehicle with
Boom Mounted Aircraft Cabin Skin Penetrator
"Snuzzle"

Technological Innovations

Technology transfer has had a dramatic impact on fostering mutually beneficial technology between the FAA and its partners. These innovative partnerships have significantly contributed to the mission and vision of the FAA and its partners and have enhanced the economic well-being of the nation.

Results of Innovative Partnerships

Many CRDAs and other agreements have been established between the FAA and its partners and are examples of synergistic benefits of technology transfer. The FAA is proud of the accomplishments of these partnerships, which include:

- ➔ Radiant Energy Technologies of Orchard Park, New York, developed a system that uses infrared energy to melt ice and snow from aircraft
- ➔ ESCO of Aston, Pennsylvania, developed a soft ground arrestor system using lightweight cellular concrete to safely stop aircraft from going beyond the runway
- ➔ Superior Graphite Company of Chicago, Illinois, tested an electrically conductive asphalt pavement that can be heated to melt snow and ice on runways
- ➔ Boeing Corporation of Seattle, Washington, established the National Airport Pavement Test Machine at the William J. Hughes Technical Center
- ➔ City of San Antonio, Department of Aviation, San Antonio, Texas, for an aircraft rescue and fire fighting, post-crash interior fire suppression demonstration using a boom mounted aircraft cabin skin penetrator
- ➔ Several organizations have partnered to conduct research of explosives detection systems for use on checked baggage, air cargo, carry-on baggage, and passengers.





Commercializati



Softground Arresting System

Intellectual Property

As part of the Government's commitment to assist American industry by means of technology transfer, the FAA participates in commercializing and capitalizing on the results of their R&D activities. These resulting products are known as intellectual property and can include reports, technical data, invention disclosures and patents, software and software documentation, and other types of technical information and products. In addition to the intellectual property, the Government receives certain rights to this intellectual property, which it may then pass on to others for commercialization.

Forms of Intellectual Property

Patents

A patent is a government grant that gives the inventor the right to exclude others from making, selling or using the invention for 20 years. Patents issued by the United States Patent and Trademark Office are valid throughout the U.S. However, foreign patent protection is available as well.

The FAA has its own portfolio of issued patents based on the work of its scientists and engineers. Examples of recent FAA-owned patents include:

- ➔ Device and Method to Measure Mass Loss Rate of an Electronically Heated Sample is a device and method for measuring the mass loss rate of a sample of combustible materials placed on a mass-sensitive platform.
- ➔ Heat Release Rate Calorimeter is a calorimeter that measures heat release rates of very small samples.
- ➔ Adiabatic Expansion Nozzle is a nozzle for producing a continuous gas/solid or gas/aerosol stream from a liquid having a high room vapor pressure.
- ➔ Wing Tank Liner is a liner for aircraft fuel tanks which limits the amount of fuel that can be spilled in the event of a crash.
- ➔ Microscale Combustion Calorimeter is a calorimeter for measuring flammability parameters of materials using only milligram sample quantities.
- ➔ Infant Transporting Means for Airplanes is a means for transporting an infant on an airplane in a supporting device or carrier.
- ➔ Portable Radar or Beacon Emulator is an emulator for a radar set which utilizes a conventional personal computer rather than specialized equipment.

Copyrights

A copyright protects original published and unpublished works of authorship fixed in a tangible medium of expression, which includes literary, dramatic, musical, and artistic works.

Others include Mask Works, Trademarks, and Trade Secrets.

Licensing of FAA Inventions

Licensing is the most effective vehicle used by the FAA to commercialize its technologies. A license is an agreement that permits the private-sector company to use FAA inventions and other technology with the permission of the Government. In effect, the Government agrees not to take legal action against the company for infringement of its patent rights. The FAA may award various exclusive or nonexclusive licenses, depending on which promises to be most successful in bringing the invention into the marketplace. Government-owned patents may provide a source of revenue to the FAA through licensing to the private sector.



Visit the Technology Transfer website:
<http://www.tc.faa.gov/technologytransfer/>

Other related websites:
<http://t2.dot.gov/>
<http://www.federallabs.org/>

FAA William J. Hughes Technical Center
Atlantic City International Airport, NJ 08405